

SEP 28 2007

AMENDMENTS TO THE CLAIMS

1-4. (Canceled)

PN 5. (Currently Amended) An amplifier apparatus in which a signal is amplified by an amplifier and distortion produced by the amplifier is compensated for, the amplifier apparatus comprising:

distortion component amplitude detection means that detects an amplitude of a distortion component produced by the amplifier contained in a signal amplified by the amplifier after distortion compensation; and

amplified signal level reduction control means that, in a case in which the amplitude of the distortion component detected by the distortion component amplitude detection means exceeds a predetermined threshold value, performs control to reduce a level of the signal amplified by the amplifier.

~~An amplifier apparatus according to claim 1,~~

wherein the amplified signal level reduction control means performs control to reduce [[a]] the level of [[a]] the signal amplified by ~~an~~ the amplifier by performing control to change the gain of ~~an~~ the amplifier, ~~the amplifier being constituted as a variable-gain amplifier.~~

6-7. (Canceled)

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PN 8. (Currently Amended) An amplifier apparatus in which a signal is amplified by an amplifier and distortion produced by the amplifier is compensated for, the amplifier apparatus comprising:

distortion component amplitude detection means that detects an amplitude of a distortion component produced by the amplifier contained in a signal amplified by the amplifier after distortion compensation; and

amplified signal level reduction control means that, in a case in which the amplitude of the distortion component detected by the distortion component amplitude detection means exceeds a predetermined threshold value, performs control to reduce a level of the signal amplified by the amplifier,

wherein the amplified signal level reduction control means performs control to reduce the level of the signal amplified by the amplifier by performing control to have the signal attenuated prior to amplification by a variable attenuator provided in a stage before the amplifier,

An amplifier apparatus according to claim 3,

wherein the amplifier apparatus further comprising comprises a variable attenuator, a delayer, a predistortion circuit, amplifier, an envelope detector, and a compensation table, sideband power detector, integrator, and controller,

wherein the distortion component amplitude detection means includes a sideband power detector and an integrator,

wherein the amplified signal level reduction control means includes the variable attenuator and a controller,

wherein [[a]] an input signal that is an object of amplification is input to the variable attenuator and the envelope detector,

wherein the variable attenuator attenuates the input signal by an attenuation amount controlled by the controller, and outputs the attenuated signal to the delayer,

wherein the delayer delays the signal input from the variable attenuator by a predetermined delay time and outputs it to the predistortion circuit,

wherein the predistortion circuit adjusts the an amplitude of the signal input from the delayer by attenuating the signal by an attenuation amount that is based on a compensation data signal relating to amplitude adjustment input from [[a]] the compensation table, and adjusts the a phase of the signal by a phase change amount that is based on a compensation data signal relating to phase compensation input from [[a]] the compensation table, and outputs the amplitude-and-phase-adjusted signal to the amplifier,

wherein the amplifier amplifies the signal input from the predistortion circuit and outputs the amplified signal,

wherein the envelope detector detects the envelope of the input signal and outputs envelope information to the compensation table,

wherein the compensation table contains correspondences between the envelope information and compensation data relating to amplitude adjustment by the predistortion circuit, and also contains correspondences between the envelope information and compensation data relating to phase adjustment by the predistortion circuit, and outputs to the predistortion circuit [[a]] the compensation data signal relating to amplitude adjustment and [[a]] the compensation

data signal relating to phase adjustment corresponding to the envelope information input from the envelope detector,

wherein the sideband power detector detects, from input of a portion of the signal output from the amplifier, sideband signal power that becomes leakage power to adjacent channels in ~~the~~ a transmission output, and outputs the detection result to the integrator,

wherein the integrator performs fixed-time-period integration of the ~~results~~ detection result input from the sideband power detector and outputs the integration result to the controller, and

wherein based on the integration result input from the integrator, the controller updates compensation data relating to amplitude adjustment and compensation data relating to phase adjustment contained in the compensation table to decrease ~~the~~ an integration value input from the integrator, and also performs control to increase the attenuation amount of the variable attenuator in a case in which ~~an~~ the integration value input from the integrator exceeds a preset threshold value.

PN 3 ~~8~~ (Currently Amended) An amplifier apparatus in which a signal is amplified by an amplifier and distortion produced by the amplifier is compensated for, the amplifier apparatus comprising:

distortion component amplitude detection means that detects an amplitude of a distortion component produced by the amplifier contained in a signal amplified by the amplifier after distortion compensation; and

amplified signal level reduction control means that, in a case in which the amplitude of the distortion component detected by the distortion component amplitude detection means exceeds a predetermined threshold value, performs control to reduce a level of the signal amplified by the amplifier,

wherein the amplified signal level reduction control means performs control to reduce the level of the signal amplified by the amplifier by performing control to have the signal attenuated after amplification by a variable attenuator provided in a stage after the amplifier,

An amplifier apparatus according to claim 4,

wherein the amplifier apparatus further comprising comprises a delayer, a predistortion circuit, variable attenuator, amplifier, an envelope detector, and a compensation table, sideband power detector, integrator, and controller,

wherein the distortion component amplitude detection means includes a sideband power detector and an integrator,

wherein the amplified signal level reduction control means includes the variable attenuator and a controller,

wherein [[a]] an input signal that is an object of amplification is input to the delayer and the envelope detector,

wherein the delayer delays the input signal by a predetermined delay time and outputs it to the predistortion circuit,

wherein the predistortion circuit adjusts the an amplitude of the signal input from the delayer by attenuating the signal by an attenuation amount that is based on a compensation data

signal relating to amplitude adjustment input from the compensation table, and adjusts the a phase of the signal by a phase change amount that is based on a compensation data signal relating to phase compensation input from the compensation table, and outputs the amplitude-and-phase-adjusted signal to the variable attenuator,

wherein the variable attenuator attenuates the signal input from the predistortion circuit by an attenuation amount controlled by the controller, and outputs the attenuated signal to the amplifier,

wherein the amplifier amplifies the signal input from the variable attenuator and outputs the amplified signal,

wherein the envelope detector detects the envelope of the input signal and outputs envelope information to the compensation table,

wherein the compensation table contains correspondences between the envelope information and compensation data relating to amplitude adjustment by the predistortion circuit, and also contains correspondences between the envelope information and compensation data relating to phase adjustment by the predistortion circuit, and outputs to the predistortion circuit [[a]] the compensation data signal relating to amplitude adjustment and [[a]] the compensation data signal relating to phase adjustment corresponding to the envelope information input from the envelope detector,

wherein the sideband power detector detects, from input of a portion of the signal output from the amplifier, sideband signal power that becomes leakage power to adjacent channels in the transmission output, and outputs the detection result to the integrator,

wherein the integrator performs fixed-time-period integration of the ~~results~~ detection result input from the sideband power detector and outputs the integration result to the controller, and

wherein based on the integration result input from the integrator, the controller updates compensation data relating to amplitude adjustment and compensation data relating to phase adjustment contained in the compensation table to decrease ~~the~~ an integration value input from the integrator, and also performs control to increase the attenuation amount of the variable attenuator in a case in which ~~an~~ the integration value input from the integrator exceeds a preset threshold value.

PN 4 10. (Currently Amended) An amplifier apparatus according to claim ~~5~~, further comprising a delayer, a predistortion circuit, ~~an amplifier constituted as a variable gain amplifier,~~ an envelope detector, and a compensation table, ~~sideband power detector, integrator, and~~ controller,

wherein the distortion component amplitude detection means includes a sideband power detector and an integrator,

wherein the amplified signal level reduction control means includes a controller,

wherein [[a]] an input signal that is an object of amplification is input to the delayer and the envelope detector,

wherein the delayer delays the input signal by a predetermined delay time and outputs it to the predistortion circuit,

wherein the predistortion circuit adjusts the an amplitude of the signal input from the delayer by attenuating the signal by an attenuation amount that is based on a compensation data signal relating to amplitude adjustment input from the compensation table, and adjusts ~~the~~ a phase of the signal by a phase change amount that is based on a compensation data signal relating to phase compensation input from the compensation table, and outputs the amplitude-and-phase-adjusted signal to the amplifier,

wherein the amplifier amplifies the signal input from the predistortion circuit at ~~again~~ a gain controlled by the controller and outputs the amplified signal,

wherein the envelope detector detects the envelope of the input signal and outputs envelope information to the compensation table,

wherein the compensation table contains correspondences between the envelope information and compensation data relating to amplitude adjustment by the predistortion circuit, and also contains correspondences between the envelope information and compensation data relating to phase adjustment by the predistortion circuit, and outputs to the predistortion circuit ~~[[a]]~~ the compensation data signal relating to amplitude adjustment and ~~[[a]]~~ the compensation data signal relating to phase adjustment corresponding to the envelope information input from the envelope detector,

wherein the sideband power detector detects, from input of a portion of the signal output from the amplifier, sideband signal power that becomes leakage power to adjacent channels in ~~the~~ a transmission output, and outputs the detection result to the integrator,



wherein the integrator performs fixed-time-period integration of the ~~results~~ detection result input from the sideband power detector and outputs the integration result to the controller, and

wherein based on the integration result input from the integrator, the controller updates compensation data relating to amplitude adjustment and compensation data relating to phase adjustment contained in the compensation table to decrease ~~the~~ an integration value input from the integrator, and based on the integration value input from the integrator, also controls the amplifier to reduce the amplifier gain in a case in which ~~an~~ the integration value input from the integrator exceeds a preset threshold value.

11-14. (Canceled)

PN 5 15. (Currently Amended) An amplifier apparatus in which a signal is amplified by an amplifier and distortion produced by the amplifier is compensated for, the amplifier apparatus comprising:

distortion component amplitude detection means that detects an amplitude of a distortion component produced by the amplifier contained in a signal amplified by the amplifier after distortion compensation;

amplified signal level reduction control means that, in a case in which the amplitude of the distortion component detected by the distortion component amplitude detection means

exceeds a predetermined threshold value, performs control to reduce a level of the signal amplified by the amplifier; and

compensating means for compensating for distortion produced by the amplifier, the compensating means including a predistortion means that generates distortion with respect to a signal prior to amplification by the amplifier, and predistortion control means that controls the distortion generated by the predistortion means based on the amplitude of the distortion component detected by the distortion component amplitude detection means.

An amplifier apparatus according to claim 2,

wherein the amplified signal level reduction control means performs control to reduce ~~[[a]]~~ the level of ~~[[a]]~~ the signal amplified by ~~an~~ the amplifier by performing control to change the a gain of ~~an~~ the amplifier, the amplifier being constituted as a variable-gain amplifier.

16-17. (Canceled)